Photo courtesy of Adaptive Methods, Inc.

R-TECH NEWSLETTER
The Newsletter of the First Responder Technologies Program

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IN THIS ISSUE

AT THE PUSH OF A BUTTON

Portable Shelter Can Be Rapidly Deployed During Emergencies


Photo courtesy of Adaptive Methods, Inc.

In the wake of a disaster, first responders frequently need to rapidly set up temporary structures for triage, protection, and shelter. The Oak Ridge National Laboratory (ORNL) Y-12 National Security Complex has developed the Rapid Deployment Shelter System (RDSS), a portable structure that opens in less than two minutes by simply pressing a button. Once called a "hospital in a box," the RDSS was originally designed for the U.S. Army to use as a mobile surgical suite and has recently undergone a number of advances.

The RDSS can be adapted to various emergency response situations, including emergency housing. The structure has interlocking channeled aluminum walls supported by titanium hinges, enabling the shelter to remain fully sealed once deployed. Its hard-shelter technology also offers resistance to radiological, biological, and chemical hazards, as well as limited protection from small gunfire. This added security makes the shelter particularly valuable for federal agencies such as the National Guard and the Federal Emergency Management Agency (FEMA).

The RDSS is the size of a 20-foot shipping container when packed and spans 400 square feet when fully set up. The structure can be opened by one person and requires no special training. To deploy the unit, the operator simply pushes a button on a control panel located inside the main door. The same button collapses the unit. The RDSS units are easily transportable by truck, ship, train, or helicopter (which can be especially advantageous for deploying the shelters to remote or difficult to access areas during disasters).

Adaptive Methods, Inc., the manufacturer of RDSS, is also exploring ways to provide other functional designs, including decontamination units, shower stations, latrine facilities, medical triage centers, and Primary Complex Sustainment Units, which are equipped with generators, water filtration systems, and outlets to power other RDSS modules. Development of additional versions of RDSS is expected to begin in spring 2009, with initial production scheduled for June.

For more information about the ORNL Y-12 National Security Complex, visit www.y12.doe.gov.

To learn more about Adaptive Methods, Inc., visit www.adaptivemethods.com.


Photo courtesy of Adaptive Methods, Inc.


Photo courtesy of Adaptive Methods, Inc.

ON THE GRID

3-D Personnel Location System May Help Save Responder Lives

Photo courtesy of DHS S&T

Even the newest rookie firefighter knows that inside a structure fire things can go from bad to worse in seconds. Once firefighters enter structures, their locations and situations become effectively invisible to incident commanders. Several firefighter fatality incidents (such as the December 1999 Worcester cold storage fire which took the lives of six firefighters) caused the fire service to overhaul its approach to personnel tracking on the fireground, including not only the development of technology such as Personnel Accountability Safety System (PASS) devices but also the implementation of safety practices such as the Two-In/Two-Out Rule and Rapid Intervention Teams. In addition to these advances in firefighter safety, the fire service has long sought a reliable technology to track, locate, and monitor personnel inside buildings in real time.

The goal of such a system, according to Jalal Mapar, program manager of the Infrastructure and Geophysical Division of the U.S. Department of Homeland Security (DHS) Science and Technology Directorate (S&T), is to track firefighters inside buildings in real time and in three dimensions (i.e., what floor they are on, and where they are on that floor). Unfortunately, this has proven an elusive goal. One might think the Global Positioning System (GPS) is the obvious technology for this task, but GPS does not work well inside buildings because it works by triangulating signals from satellites, and signal acquisition is impeded by structures. Moreover, even if a GPS system could overcome the reception problems posed by structures, GPS units give position information in two dimensions (longitude and latitude); they do not give altitude information. Furthermore, altitude information needs to be translated into a physical floor reference for multi-floor buildings in order to be of use to the fire service. In addition to overcoming the technological challenges, Mapar said, the solution must be accurate and affordable to fire departments.

Mapar has collaborated with L-3 Communications to develop a three-dimensional personnel locator system, with funding from DHS. The system integrates commercially available components, including accelerometers, pedometers, a magnetic compass, radio ranging, and an altimeter – a "cocktail solution," according to Mapar – that results in an accurate measure of location.

Firefighter locator units communicate with each other and with a command unit (i.e., a unit which enables incident commanders to view individual responders' locations) through the combination of an ad hoc network router and a 20-channel GPS receiver. The wireless mesh network generated by this configuration creates a relay system to ensure that no responder loses connection due to a weak GPS signal.

Testing at L-3's facilities in Anaheim, California has produced promising results to within 3 meters in X/Y/Z for several cases. The challenge for the future, said Mapar, will be to decrease the size of the unit, reduce cost, and increase accuracy. If all goes well, he hopes to have the system ready for commercialization within two years.

For more information on the firefighter tracking system program, e-mail Jalal Mapar at Jalal.Mapar@dhs.gov.

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SAFEGUARDING THE GUARDIANS

An Overview of Emergency Service Sector Activities in Critical Infrastructure/ Key Resource Protection

Photo courtesy of FEMA photo library

First responder disciplines work together every day to address local incidents. They also work together to formulate national policy. Recognized by the U.S. Department of Homeland Security (DHS) as one of 18 critical infrastructure sectors/key resource (CI/KR) areas, the Emergency Services Sector (ESS) comprises first responder disciplines represented by a coordinating council of national associations that engage DHS on major issues ranging from technology capability gaps to operations management.

ESS is a network of preparedness, response, and recovery elements that form the nation's first line of defense for preventing and mitigating all hazards. ESS encompasses a wide range of emergency response functions, the primary missions of which include saving lives, protecting property and the environment, assisting communities affected by disasters, and aiding in recovery during emergency situations. In particular, ESS identifies nine functions and specialties among its constituency: law enforcement, bomb and explosive ordnance demolition, special weapons and tactics and tactical operations, firefighting, emergency medical services, search and rescue, urban search and rescue, emergency management, and hazardous materials response.

ESS includes a Sector Coordinating Council (SCC) comprising several national associations that represent distinct first responder disciplines, including the International Association of Emergency Managers, International Association of Fire Chiefs, International Association of Chiefs of Police, National Association of State Emergency Medical Services Officials, and the National Sheriffs' Association.

SCCs are formed pursuant to Homeland Security Presidential Directive 7 (HSPD-7), which establishes a national framework for the federal government to identify, prioritize, and protect CI/KR from all hazards. HSPD-7 mandates the creation and

(Safeguarding the Guardians continued)

implementation of the National Infrastructure Protection Plan (NIPP), which sets forth the roles and responsibilities of DHS, Sector-Specific Agencies (SSAs), and tribal, state, local, and private partners.

The Sector-Specific Plan (SSP) maintains the ESS framework for developing and implementing risk management. The SSP is carried out through Sector Annual Reports (SARs) that define the state of the sector, identify significant issues, and outline plans to resolve potential issues. A copy of the ESS SSP may be requested by contacting Mr. Kory Whalen, Emergency Services Branch Chief, at kory.whalen@dhs.gov or (703) 235-2869.

In the most recent ESS SAR (May 2007) identified the following major priorities:

- To achieve an understanding of the physical, cyber, and human elements of ESS assets as well as the entities with which those assets share dependencies or interdependencies;
- To establish and refine processes and mechanisms for ongoing coordination, which will include majority sector participation in an information-sharing network that supports vertical and horizontal dissemination of threat information; and
- To establish a current risk profile of the assets, systems, and networks that compose the ESS, set forth in a manner that supports the risk-based prioritization of CI/KR protection activities both within the sector and across all CI/KR sectors.

Current ESS initiatives and accomplishments involve efforts to build and strengthen existing partnerships. For example, ESS collaborated with the Commercial Facilities SSA to develop desk and pocket reference guides as well as educational posters that provide practical guidance for responses to an active shooter event. These materials are intended for release to the owners and operators of commercial facilities. ESS also developed "Emergency Services Infrastructure Protection in Practice," a document that outlines model practices to improve the sector's ability to protect itself in emergencies. The ESS SSA has also been actively seeking out new federal, tribal, state, local, territorial, and private partners.

To learn more about ESS, first responders should contact their respective member organizations of the SCC:

- International Association of Chiefs of Police (www.theiacp.org)
- International Association of Emergency Managers (www.iaem.com)
- International Association of Fire Chiefs (www.iafc.org)
- National Association of State EMS Officials (www.nasemso.org)
- National Emergency Management Association (www.nemaweb.org)
- National Sheriffs Association (www.sheriffs.org)

Photo courtesy of FEMA photo library

THE RESPONDER KNOWLEDGE BASE

Operational Assessments Enhance Product Information on the RKB

In addition to providing first responders with the ability to research product and grant information, the Responder Knowledge Base (RKB) has a number of other features available. One is a comprehensive collection of operational assessments located under the "Other Content" tab.

RKB currently has 323 assessments, which fall into three categories: System Assessment and Validation for Emergency Responders (SAVER) Assessments, National Tactical Officers Association (NTOA) Member Tests, and Operational Assessments.

The SAVER program was established by the Federal Emergency Management Agency (FEMA) to assist first responders in making procurement decisions. SAVER conducts objective assessments and validations on commercial equipment and systems, and provides those results, along with other relevant equipment information, to the first responder community in an operationally useful form. SAVER provides information on equipment that falls within the categories listed in the U.S. Department of Homeland Security's (DHS) Authorized Equipment List (AEL). Examples of comparative SAVER assessment information available to registered users include:

- Portable Loudspeakers Assessment
- Hand-Held Language Translators Assessment
- Helmet-Mounted Lights Assessment
- Radiation Pagers and Survey Meters Assessment

The NTOA Member-Tested and Recommended program is a service to assist NTOA's membership in selecting the best products available to the tactical community. NTOA member tests are performed by a field tester who is also a member of the organization. Passage of the test does not indicate that a product has been approved or endorsed by either the NTOA or the U.S. Government. NTOA assessments cover a variety of items of interest for the tactical community, and links to the assessment information are available on the RKB.

The Operational Assessments section covers a variety of equipment from various government or other impartial organizations. Examples of assessment information that can be found on the RKB include:

- Domestic Nuclear Detection Office (DNDO)–Personal Radiation Detectors Test Campaign
- Domestic Preparedness Program Testing of the VaporTracer
- U.S. Environmental Protection Agency's (EPA) Environmental Technology Verification Program Testing of Ambient Ammonia Sensors
- Law Enforcement Robot Technology Assessment

Each assessment page on the RKB provides either the report itself or links to the agency that performed the assessment. Each assessment page may also include links to related products, relevant AEL/Standardized Equipment List (SEL) items, and related grants information.

For more information, visit www.rkb.us. For questions or suggestions, e-mail info@rkb.us or call (703) 641-2078.